WHAT OUR NEW MOUNTAIN AND FIELD ARTILLERY CAN DO

How a Shrapnel Shell from Our New Mountain Gun Bursts Over an Intrenchment and Rains Down a Shower of 250 Bullets Like a Volley from the Sky.

THE war with Spain revealed one very weak spot in our American army outfit—our field artillery. Germany has a remarkably heavy calibre rapid-fire field gun, and France has just perfected an artillery terror, which was recently described in the Sunday Journal. But our own army is wretchedly behind the age in this vitally important equipment; and military history has demonstrated again and again that in battle victory follows the best artillery.

Even before the Spanish war ended efforts were begun to strengthen our army artillery. Several batteries of light mountain guns were secured abroad which can be packed over hills and rough country on the backs of mules. Experiments and tests were also begun with heavier field guns, and the Government has now decided to purchase an outfit of 12½-pounder guns of the Vickers-Maxim make. This gun is believed to be a match for the best heavy artillery in any of the field equipments of the armies of Europe.

In a few days the War Department will send four batteries of mountain guns to Cuba for service with the United States troops stationed there. An additional battery will be sent to Porto Rico and three full batteries will be sent to the Philippines.

For the present the mountain batteries will be made up of two-pounder Hotchkiss rapid-fire pieces, capabl of firing fifteen shots per minute, but later on a heavier type of gun will be substituted, one capable of throwing a thirteen-pound projectile at the rate of twenty shots per minute.

The mountain guns are, as their name indicates, intended for use in rough, hilly country, which may be impassable for the heavier field pieces.

Wherever a mule can go one of these mountain guns can be taken, for gun, carriage and equipments will be carried on the backs of animals. Mules are to be employed, since they stand hardship better than horses, and, what is of still greater importance, they are more sure-footed.

In the case of the two-pounder batteries one mule will carry the gun. The weight packed will be 233 pounds. A second mule will carry the carriage and trail piece, while a third mule will carry ammunition. It is the purpose of the War Department authorities to allow six ammunition mules for each gun. The number of guns to a battery will be four.

At Omdurman it is reported that a single shrapnel shell killed and wounded 200 men.

The new American mountain gun is calculated to be pre-eminently a shrapnel weapon, but this will not prevent its using shell proper and also canister. The canister consists of a tin case filled with ounce balls, all being packed in sawdust. Canister will be used only for work at close range, distances, say, under 500 yards. The tin case will be dissipated on firing as quickly as a wad used in a shot gun. The canister balls will be hurled forward after the manner of a charge of duck shot.

It is expected that the work of making the new mountain guns will be undertaken within the next six weeks. It is proposed to have several batteries ready for issue in the early Spring. Until the new guns put in an appearance the two-under weapons will be called upon to do all work required. In the packing arrangement there will be no departure from the practice in vogue with the two-pounder piece, except that an additional mule will be required.

The new gun has a heavier trail piece, which is divided into two sections. It is proposed with the new gun to carry the gun proper on one mule and to divide the carriage and trail piece between two other animals. The present two-pounder gun and its carriage can be packed by two mules. The ammunition mules in either case are extra.

The ordnance officers charged with the artillery designs of the United States have still another duty upon their shoulders, and one upon which they are now engaged. It has to do with the deciding upon a type of rapid-fire field gun for the American army. The present artillery of the United States is of the slow-firing, common type. In Europe nearly every army is provided with rapid-fire artillery.

The Journal recently printed illustrations of the magnificent field guns of France. It was of these weapons that a leading French statesman recently remarked during the Fashoda incident:

"GOD HELP THE YOUTH OF GREAT BRITAIN IF THEY ARE EVER CALLED UPON TO FACE OUR NEW FIELD ARTILLERY."

It is no exaggeration to say that the present type of field gun in the American army bears about the same position relatively to the rapid-firing gun of France that the Springfield rifle does to the Krag-Jorgensen.

The Unied States has learned many valuable lessons as a result of the Spanish war, but in no particular has our weakness been so apparent as in the case of artillery. Our artillery officers are deemed the equals of any in the world, but in the recent campaign they were obliged to use not only slow-firing guns, but a non-smokeless powder. Against an alert, modern equipped army our present batteries, if pitted against the same number of rapid-fire guns on the other side, would in all likelihood be annihilated.

To design for the United States a first-class rapid-firing field gun is now the all-important effort of the ordnance experts. It is premature to say that any one type has been decided upon, but it is understood from good authority that a majority of the officers of the Board favor a gun after the type of the new Vickers-Maxim field piece.

This gun is shown in the cut. It throws a projectile weighing 12½ pounds at a very high muzzle velocity for a field piece. The ball does not weigh as much, it will be observed, as the mountain gun shell, but then its range is about twice that of the mountain piece.

The peculiarity of the favored weapon is not only its rapid-firing breech attachment, but its rigidity. At the bottom of the trail will be noticed a spade-shaped piece of metal. This spade settles into the ground on the first fire. If left free the gun would jump back on each discharge about seven feet. This precludes rapid fire. In order to take up the recoil there is fitted on an hydraulic buffer under the trail. The gun and carriage recoil on the buffer. Along the piston is a series of powerful spiral springs, which are compressed on discharge. As soon as the hydraulic buffer checks the back throw of the gun the springs push the gun and carriage forward into normal position.

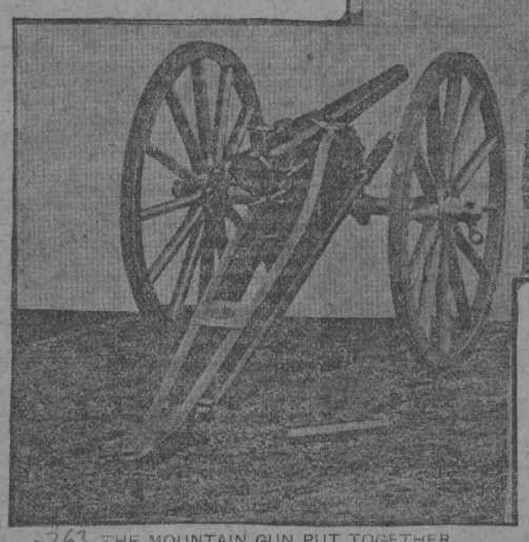
The gunner can take his stand at the breech and fire as fast as the gun can be loaded. Something like twenty shots per minute can be fired under the new arrangement. In the case of the present field guns of the United States it is necessary to run them forward by hand after each discharge.

It requires six horses and six gunners to each rapid-fire piece, independent of the ammunition, limbers and drivers.

Scene of Devastation in the Enemy's Trench When a Shell From Uncle Sam's New Mountain Gun Bursts Over It.

NEW MOUNTAIN GUN ON MULE BACK.

HOW THE AMMUNITION IS CARRIED.



263 THE MOUNTAIN GUN PUT TOGETHER.

Our New 12 1-2 Pounder Field Gun.

THE GUN CARRIAGE IN SECTIONS.

England, Germany and France, and even Spain, possess magnificent mountain guns, weapons capable of throwing a large shell, but the United States to-day has to content itself with two-pounder guns. The only explanation is that heretofore we have had no especial need for cannon of this peculiar type. England in her numerous wars among the hill tribes of Northern India has had recourse of late years to a screw gun for mountain work. The English were determined to posseas a weapon which could afford a heavy mine effect at the end of the shell flight. The ordinary gun, which was capable of rendering the work demanded, was too heavy a piece to be carried in pack. So the English ordnance experts designed a gun which could be taken apart at a point midway between the muzzle and breech. This is effected by screw threads. The gun is literally screwed together for use and unscrewed when made ready for packing.

No one realized during the past Summer more than did General Miles the advantage which would have been given the American army had it possessed in the Santiago campaign a few batteries of good mountain guns. The heavy field pieces which the American army took to Cuba were with great difficulty dragged to firing positions at the front. The constant rains in the afternoons soon converted the trails into soft mud, and it was no uncommon sight to see a gun carriage imbedded in a pass up to its axles. Celerity of movement was out of the question. It would all have been very different had good mountain guns been available. Pieces of this latter type could have been hurried from point to point almost as rapidly as cavalry, and no Spanish block house could have withstood the battering effect of their shells.

In the works of the Hotchkiss establishment in Paris there were last Spring a dozen or more batteries, complete, of two-pounder mountain guns. The Hotchkiss people took occasion to send some of these batteries over to the United States before war was declared, but the War Department saw no especial need for them until the reports came in from Santiago of the trouble experienced with the heavy field pieces. Then it was, it is said, that the Government bought up as many guns as were available, but it was too late to put them into active service in Cuba. It is these two-pounder mountain guns that are now being sent to the front for duty with the armies of occupation in Uncle Sam's new possessions. The ordnance experts have now succeeded in agreeing upon a new weapon which promises to be the best of its type in the world. The new gun, it is announced, resembles closely the mountain gun recently designed by the Krupps for the Spanish army. It was a common saying among military men during the past Summer that the Spanish possessed not only the best infantry arm in the world, but the best mountain gun. Both weapons were of German design. The fact that the Spaniards did not use these weapons as effectively as they might have done was not the fault of the guns.

The new American mountain gun will possess, it is said, all the virtues of the Krupp gun, and yet be lighter. The material difference will be in the breech-block arrangement. The Krupps use a heavy sliding wedge. The United States will employ a light screw plug. The new gun will have a calibre of nearly three inches, the exact diameter of the bore being 2.95 inches. The projectile to be fired will weigh 13.2 pounds. When using a charge of 6.7 ounces of smokeless powder, it is expected that a muzzle velocity of 985 foot-seconds will be obtained. For a light mountain gun this velocity is considered very high. Compared with the 2,000 foot-seconds velocity obtained with light naval guns it, of course, appears small, but it must be borne in mind that the main object of a gun on shore is not to pierce armor, but to throw a shell containing a large explosive charge of powder. Very few men are killed by solid shot. It is the bursting shell and shrapnel that does the deadly work. A solid shot might strike down one man. An exploding shell scatters death right and left among a group of men.

In mountain work it is assumed that the enemy is holding some point in a rocky pass. He may be entrenched behind barricades or rocks. The mountain guns are hurried up. The pieces are unlimbered from the backs of the mules and the animals are driven into some depression of the ground, where they cannot be picked off by sharpshooters. It is seen at once that the enemy, who is out of sight behind his barricades, say 2,000 yards away, cannot be reached by direct fire. The shells will hit the front face of the parapet, and there explode without doing damage to those behind.

There is only one form of projectile that will drive the enemy out, and that projectile is shrapnel.

The shrapnel shell is filled with some 250 small balls. At the base of the projectile is a charge of powder. It is not a large charge, but it is heavy enough to rend open the walls of the shell and release the balls within. The line of least resistance is toward the front end of the shell. In the nose of the projectile is a time fuse. The officer in charge of the gun knows how long it will take the shell to traverse 2,000 yards. It may be five seconds. He accordingly cuts the fuse for the desired flight, but if the distance be exactly 2,000 yards he arranges to have the shell burst in the air at a point about thirty feet over the parapet and about thirty yards short. The gun is fired.

The shrapnel rushes shrieking through the air. It has reached in its trajectory that point over the parapet where it is timed to burst. The fuse responds with all the precision of a finely adjusted chronometer. The defenders hear a roar overhead, and the next instant a terrible hail of small balls is raining down upon them. It is as if 250 sharpshooters had suddenly opened fire from the skies.

The area covered by the shrapnel balls is about 300 yards in width. When the shell explodes the small balls are not only dispersed to the right and left, but are projected forward by the impetus originally imparted by the shell proper. The general trend of the shrapnel balls is that of a cone inverted.

There is no more terrible instrument of war used to-day than the shrapnel shell.